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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/887,021	06/25/2001	Terry R. Lee	M4065.0407/P407	6645

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DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP  
2101 L Street, NW  
Washington, DC 20037

EXAMINER
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VU, TRISHA U

ART UNIT	PAPER NUMBER
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2112

DATE MAILED: 01/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/887,021	LEE, TERRY R.	
	Examiner	Art Unit	
	Trisha U. Vu	2112	

-- Th MAILING DATE of this communication appears on the cover sheet with the corresponding address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. Claims 1-35 are presented for examination.

#### *Drawings*

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the feature(s) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered:
  - i. “plurality of conductors being coupled respectively between one of said plurality of inputs and one of said plurality of pins” (as in claim 1) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.
  - ii. similarly, “conductors” (in claims 6 and 19) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.
  - iii. “plurality of conductive traces connecting between contact pins and an integrated circuit” (as in claim 8) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.
  - iv. similarly, “traces” (in claims 11, 15, 18, 26, 30, and 33) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure

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must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-2, 5-9, 11-12, 14-16, 18-21, 24, 26-27, 29-31, and 33-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Robertson et al. (6,658,530) (hereinafter Robertson).

As to claim 1, Robertson teaches a circuit card (memory module 100) comprising: a circuit element having a plurality of inputs and a plurality of outputs (Figs. 1A, 1B); a connector (connector 102) having a plurality of pins (pins 104, 106,...); and a plurality of conductors (each of the plurality of signal pins is electrically coupled to a signal trace) (Fig. 1A and col. 3, lines 47-67), each of said plurality of conductors being coupled

respectively between one of said plurality of inputs and one of said plurality of pins or one of said plurality of outputs and one of said pins; said plurality of conductors having a first portion for conducting bus signals (signal pins 104) and a second portion for providing a shield (ground pins 106), said pins in said first portion being grouped in a plurality of corresponding pairs, a respective one of said pins in said second portion being located on each side of each of said plurality of corresponding pairs of said first portion of said plurality of pins (two signal pins 104 are arranged between a pair of ground pins) (Fig. 2B and col. 4, lines 57-67).

As to claim 2, Robertson further teaches the shield is a ground shield (ground) (col. 3, lines 62-67).

As to claim 5, Robertson further teaches the circuit element is a memory device (col. 4, lines 5-21).

As to claim 6, Robertson teaches a circuit card comprising: a connector (connector 102) having a plurality of pins (pins 104, 106,...); a plurality of conductors (each of the plurality of signal pins is electrically coupled to a signal trace) (Fig. 1A and col. 3, lines 47-67), each of said plurality of conductors being coupled at a first end respectively to one of said plurality of pins; and a circuit element having a plurality of inputs and a plurality of outputs (Figs. 1A, 1B), said conductors being coupled at a second end respectively to one of said plurality of inputs or one of said plurality of outputs (Fig. 1A and col. 3, lines 47-67); said plurality of conductors having a first portion for conducting bus signals (signal pins 104) and a second portion for providing a shield (ground pins 106), said conductors in said first portion being grouped in a plurality

of corresponding pairs, a respective one of said conductors in said second portion being located on each side of each of said plurality of corresponding pairs of said first portion of said plurality of conductors (two signal pins 104 are arranged between a pair of ground pins) (Fig. 2B and col. 4, lines 57-67).

As to claim 7, Robertson further teaches the shield is a ground shield (ground) (col. 3, lines 62-67).

As to claim 8, Robertson teaches a circuit card comprising: a first plurality of conductive traces connecting between contact pins and a circuit element to conduct signals (each of the plurality of signal pins is electrically coupled to a signal trace), said first plurality of conductive traces being grouped in a plurality of corresponding pairs (pair of signals); and a second plurality of conductive traces extending adjacent said first plurality of conductive traces to provide a shield (ground), a respective one of said second plurality of conductive traces being located on each side of each of said plurality of corresponding pairs of said first plurality of conductive traces; wherein said first plurality of conductive traces are part of a bus system (two signal pins 104 are arranged between a pair of ground pins) (Figs. 1A, 1B, 2B and col. 4, lines 57-67).

As to claim 9, Robertson further teaches the shield is a ground shield (ground) (col. 3, lines 62-67).

As to claim 11, Robertson teaches a memory expansion card (memory module 100) comprising: a memory device having a plurality of inputs and outputs (Figs. 1A, 1B); a connector having a plurality of pins (connector 102 with pins 104, 106,...), and a plurality of traces, each of said plurality of inputs and outputs of said memory device

being coupled by a respective trace to at least one of said plurality of pins to receive signals from or send signals to said pins of said connector, a first portion of said plurality of traces for conducting signals (signal pins 104) and a second portion of said plurality of traces for providing a shield (ground pins 106), said traces in said first portion being grouped in a plurality of corresponding pairs, a respective one of said traces in said second portion being located on each side of each of said plurality of corresponding pairs of said first portion of said plurality of traces; wherein said first portion of said plurality of traces is part of a bus system (two signal pins 104 are arranged between a pair of ground pins) (Figs. 1A, 1B, 2B and col. 4, lines 57-67).

As to claim 12, Robertson further teaches the shield is a ground shield (ground) (col. 3, lines 62-67).

As to claim 14, Robertson further teaches the connector is adapted for connection to a motherboard (col. 3, lines 47-66 and col. 4, lines 40-59).

As to claim 15, teaches a memory expansion card (memory module 100) comprising: a memory device having a plurality of inputs and a plurality of outputs (Figs. 1A, 1B); a first plurality of conductive traces to conduct signals to said plurality of inputs or from said plurality of outputs (each of the plurality of signal pins is electrically coupled to a signal trace), said first plurality of conductive traces being grouped in a plurality of corresponding pairs (signals); and a second plurality of conductive traces to provide a shield (ground), a respective one of said second plurality of conductive traces being located to extend along each side of each of said plurality of corresponding pairs of said first plurality of conductive traces; wherein said first plurality of conductive traces

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are part of a bus system (two signal pins 104 are arranged between a pair of ground pins) (Figs. 1A, 1B, 2B and col. 4, lines 57-67).

As to claim 16, Robertson further teaches the shield is a ground shield (ground) (col. 3, lines 62-67).

As to claim 18, teaches a memory expansion card comprising (memory module 100): a connector having a plurality of pins (pins 104, 106,...), said plurality of pins having a first portion for conducting signals (signal pins 104) and a second portion for providing a shield (ground pins 106), said pins in said first portion being grouped in a plurality of corresponding pairs, a respective one of said pins in said second portion being located on each side of each of said plurality of corresponding pairs of said first portion of said plurality of pins; and a plurality of conductive traces connected respectively to each of said pins, a portion of said conductive traces being connected respectively to said pins in said second portion and extending respectively along each side of conductive traces connected to said first portion of pins, wherein said first portion of pins is part of a bus system (two signal pins 104 are arranged between a pair of ground pins) (Figs. 1A, 1B, 2B and col. 4, lines 57-67).

As to claim 19, teaches a processing system comprising: a processing unit (CPU 1001); and a circuit card (memory module 100) coupled to said processing unit (Figs. 4, 5), said circuit card comprising: a circuit element having a plurality of inputs and a plurality of outputs (Figs. 1A, 1B); a connector having a plurality of pins (connector 102 with pins 104, 106,...); and a plurality of conductors, each of said plurality of conductors being coupled respectively between one of said plurality of inputs and one of said



plurality of pins or one of said plurality of outputs and one of said plurality of pins (each of the plurality of signal pins is electrically coupled to a signal trace); said plurality of conductors having a first portion for conducting signals (signal pins 104) and a second portion for providing a shield (ground pins 106), said conductors in said first portion being grouped in a plurality of corresponding pairs, a respective one of said conductors in said second portion being located on each side of each of said plurality of corresponding pairs of said first portion of said plurality of conductors (two signal pins 104 are arranged between a pair of ground pins) (Figs. 1A, 1B, 2B and col. 4, lines 57-67); wherein said processing system comprises a bus system for passing signals through said processing system and said first portion of said plurality of pins are coupled to said bus system (Figs. 4, 5, and col. 5 lines 40-67).

As to claim 20, Robertson further teaches the shield is a ground shield (ground) (col. 3, lines 62-67).

As to claim 21, Robertson further teaches each of said plurality of inputs and plurality of outputs of said circuit element are coupled to a plurality of pins of said connector (signals from/to connector 102) (Figs. 1A, 1B).

As to claim 24, Robertson further teaches said circuit element is a memory device (col. 4, lines 5-21).

As to claim 26, teaches a processing system comprising: a processing unit (CPU 1001); and a memory expansion card coupled to said processing unit (Figs. 4, 5), said memory expansion card (memory module 100) comprising: a memory device having a plurality of inputs and a plurality of outputs (Figs. 1A, 1B); a connector having a plurality

of pins (connector 102 with pins 104, 106,...), and a plurality of traces, each of said plurality of inputs and said plurality of outputs of said memory device being coupled by a respective trace to at least one of said plurality of pins to receive signals from or send signals to said pins of said connector (Figs. 1A, 1B), a first portion of said plurality of traces for conducting signals (signal pins 104) and a second portion of said plurality of traces for providing a shield (ground pins 106), said traces in said first portion being grouped in a plurality of corresponding pairs, a respective one of said traces in said second portion being located on each side of each of said plurality of corresponding pairs of said first portion of said plurality of traces (two signal pins 104 are arranged between a pair of ground pins) (Figs. 1A, 1B, 2B and col. 4, lines 57-67); wherein said processing system comprises a bus system for passing signals through said processing system and wherein said first portion of said plurality of pins are coupled to said bus system (Figs. 4, 5, and col. 5 lines 40-67).

As to claim 27, Robertson further teaches the shield is a ground shield (ground) (col. 3, lines 62-67).

As to claim 29, Robertson further teaches a motherboard, wherein said connector is adapted for connection to said motherboard (col. 3, lines 47-66 and col. 4, lines 40-59).

As to claim 30, teaches a processing system comprising: a processing unit (CPU 1001); and a memory expansion card (memory module 100) coupled to said processing unit (Figs. 4, 5), said memory expansion card comprising: a memory device having a plurality of inputs and a plurality of outputs (Figs. 1A, 1B); a first plurality of conductive traces to conduct signals to said plurality inputs or from said plurality of outputs (each of

the plurality of signal pins is electrically coupled to a signal trace), said first plurality of conductive traces being grouped in a plurality of corresponding pairs (signals); and a second plurality of conductive traces to provide a shield (ground), a respective one of said second plurality of conductive traces being located to extend along each side of each of said plurality of corresponding pairs of said first plurality of conductive traces; wherein said first plurality of conductive traces are part of a bus system of said processing system (two signal pins 104 are arranged between a pair of ground pins) (Figs. 1A, 1B, 2B and col. 4, lines 57-67).

As to claim 31, Robertson further teaches the shield is a ground shield (ground) (col. 3, lines 62-67).

As to claim 33, teaches a method for constructing a circuit card for a bus system comprising the steps of: providing a first plurality of pins on a connector of said circuit card (connector 102 with pins 104, 106,...), said first plurality of pins for conducting bus signals (signal pins 104); grouping said first plurality of pins into a plurality of corresponding pairs; and providing a second plurality of pins on said connector of said circuit card, said second plurality of pins being connected to a respective conductive trace extending along each side of pairs of traces connected to each corresponding pair of said first plurality of pins for providing a signal shield (ground pins 106) (two signal pins 104 are arranged between a pair of ground pins) (Figs. 1A, 1B, 2B and col. 4, lines 57-67).

As to claim 34, Robertson further teaches coupling each of said second plurality of pins to a ground potential (ground) (col. 3, lines 62-67).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robertson et al. (6,658,530) (hereinafter Robertson) in view of Chin et al. (6,216,205) (hereinafter Chin).

As to claim 3, the argument above for claim 1 applies. However, Robertson does not explicitly disclose a driver to drive the signals between said inputs and said outputs of said circuit element. Chin teaches driver (I/O driver 16) to drive signals between inputs and outputs of an integrated circuit memory device (col. 8, lines 28-52). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a driver as taught by Chin in the integrated circuit memory device of Robertson to for transferring data to and from the memory device (col. 8, lines 32-39).

As to claim 22, the argument above for claim 19 applies. However, Robertson does not explicitly disclose a driver to drive the signals between said inputs and said outputs of said circuit element. Chin teaches driver (I/O driver 16) to drive signals between inputs and outputs of an integrated circuit memory device (col. 8, lines 28-52). It would have been obvious to one of ordinary skill in the art at the time the invention

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was made to include a driver as taught by Chin in the integrated circuit memory device of Robertson to for transferring data to and from the memory device (col. 8, lines 32-39).

5. Claims 4, 10, 13, 17, 23, 28, 32, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robertson et al. (6,658,530) (hereinafter Robertson) in view of Ortega et al. (6,527,587) (herein after Ortega).

As to claim 4, the argument above for claim 1 applies. However, Robertson does not explicitly disclose the signals in each of said corresponding pairs are differential signals. Ortega teaches differential signals (col. 1, lines 49-62). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement differential signals as taught by Ortega in the system of Robertson to suppress signal noise and/or cross-talk (col. 1, lines 49-52).

As to claim 10, the argument above for claim 8 applies. However, Robertson does not explicitly disclose the signals in each of said corresponding pairs are differential signals. Ortega teaches differential signals (col. 1, lines 49-62). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement differential signals as taught by Ortega in the system of Robertson to suppress signal noise and/or cross-talk (col. 1, lines 49-52).

As to claim 13, the argument above for claim 11 applies. However, Robertson does not explicitly disclose the signals in each of said corresponding pairs are differential signals. Ortega teaches differential signals (col. 1, lines 49-62). It would have been obvious to one of ordinary skill in the art at the time the invention was made to

implement differential signals as taught by Ortega in the system of Robertson to suppress signal noise and/or cross-talk (col. 1, lines 49-52).

As to claim 17, the argument above for claim 15 applies. However, Robertson does not explicitly disclose the signals in each of said corresponding pairs are differential signals. Ortega teaches differential signals (col. 1, lines 49-62). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement differential signals as taught by Ortega in the system of Robertson to suppress signal noise and/or cross-talk (col. 1, lines 49-52).

As to claim 23, the argument above for claim 19 applies. However, Robertson does not explicitly disclose the signals in each of said corresponding pairs are differential signals. Ortega teaches differential signals (col. 1, lines 49-62). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement differential signals as taught by Ortega in the system of Robertson to suppress signal noise and/or cross-talk (col. 1, lines 49-52).

As to claim 28, the argument above for claim 26 applies. However, Robertson does not explicitly disclose the signals in each of said corresponding pairs are differential signals. Ortega teaches differential signals (col. 1, lines 49-62). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement differential signals as taught by Ortega in the system of Robertson to suppress signal noise and/or cross-talk (col. 1, lines 49-52).

As to claim 32, the argument above for claim 30 applies. However, Robertson does not explicitly disclose the signals in each of said corresponding pairs are differential

signals. Ortega teaches differential signals (col. 1, lines 49-62). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement differential signals as taught by Ortega in the system of Robertson to suppress signal noise and/or cross-talk (col. 1, lines 49-52).

As to claim 35, the argument above for claim 33 applies. Robertson further teaches grouping said first plurality of pins into a plurality of corresponding pairs (Figs. 1A, 1B, 2B and col. 4, lines 57-67). However, Robertson does not explicitly disclose the pins in each corresponding part are adapted to conduct differential signals. Ortega teaches differential signals (col. 1, lines 49-62). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement differential signals as taught by Ortega in the system of Robertson to suppress signal noise and/or cross-talk (col. 1, lines 49-52).

6. Claims 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Robertson et al. (6,658,530) (hereinafter Robertson) in view of Elabd (6,526,462).

As to claim 25, the argument above for claim 19 applies. However, Robertson does not explicitly disclose the processing unit and the circuit element are on a same chip. Elabd teaches implementing the processor, memory, control unit, etc... on the same chip (col. 1, lines 22-54). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the processor and the integrated circuit on the same chip as taught by Elabd in the system of Robertson to provide a product that is smaller and faster (col. 1, lines 26-31).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trisha Vu whose telephone number is 571-272-3643. The examiner can normally be reached on Mon-Thur and alternate Fri 8:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on 571-272-3632. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Trisha Vu  
Examiner  
Art Unit 2112

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SUMATI LEFKOWITZ  
SECONDARY EXAMINER